

WEATHER DATA FOR SOUND RANGING

For use of this form, see FM 6-15; the proponent agency is TRADOC.

STATION				LOCATION				RE- LEASE TIME	<div style="border: 1px solid black; width: 100%; height: 100%; background-color: #cccccc;"></div>	DATE		HOUR	FLIGHT NO	
									LST					
									GMT					

WIND DATA												
SOUND RANGING LAYER LIMIT (meters)	TIME AT LAYER LIMIT (minutes and seconds)			ELEVATION ANGLE (degrees and tenths)	AZIMUTH ANGLE (degrees and tenths)	HORIZONTAL DISTANCE (meters)	HORIZONTAL TRAVEL IN LAYER (meters)	TIME IN LAYER (minutes and tenths)	LAYER WIND DATA		WEIGHTED WIND DATA	
	30-GRAM BALLOON	RADIOSONDE							DIRECTION (tens of mills)	SPEED (knots)	DIRECTION (tens of mills)	SPEED (knots)
		PRESSURE M3 AT LAYER LIMITS	TIME MINUTES AND TENTHS									
SUR	0:15											
800	1:54											
800	1:54											
800	1:54											
800	3:54											
									EFFECTIVE WIND (TOTALS)			

TEMPERATURE DATA				WIND WEIGHING FACTORS				DATA REPORTED TO SOUND RANGING SECTION																																					
SURFACE OBSERVATION				400-METER LAYER WIND SPEED IS: (Check one)				EFFECTIVE TEMPERATURE NEAREST 1/10°C																																					
DRY BULB _____ °C _____ °C WET BULB _____ °C DEPRESSION _____ °C VIRTUAL _____ °C x 3 = _____ °C = _____ °C TIME OF DAY CORRECTION _____ °C EFFECTIVE TEMPERATURE _____ °C PERIOD OF DAY AND TEMPERATURE CORRECTION (Check one) NIGHT +1.3°C TRANSITION AFTERNOON -1.3°C -0.6° ± 0.0° +0.6°				<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th rowspan="2" style="width: 10%;">SOUND RANGING LAYER</th> <th style="width: 15%;"><input type="checkbox"/> 1 TO 2 TIMES 200-METER LAYER</th> <th style="width: 15%;"><input type="checkbox"/> OVER 2 TIMES 200-METER LAYER</th> <th style="width: 15%;"><input type="checkbox"/> LESS THAN 200-METER LAYER AND WITHIN 2 KNOTS OF SURFACE</th> <th style="width: 15%;"><input type="checkbox"/> LESS THAN 200-METER LAYER AND NOT WITHIN 2 KNOTS OF SURFACE</th> </tr> <tr> <th style="text-align: center;">NORMAL STRUCTURE</th> <th style="text-align: center;">STRUCTURE 2</th> <th style="text-align: center;">STRUCTURE 3</th> <th style="text-align: center;">STRUCTURE 4</th> </tr> <tr><td style="text-align: center;">SURFACE</td><td style="text-align: center;">0.2</td><td style="text-align: center;">0.4</td><td style="text-align: center;">0</td><td style="text-align: center;">0</td></tr> <tr><td style="text-align: center;">200 METER</td><td style="text-align: center;">0.5</td><td style="text-align: center;">0</td><td style="text-align: center;">1.0</td><td style="text-align: center;">0</td></tr> <tr><td style="text-align: center;">400 METER</td><td style="text-align: center;">0.15</td><td style="text-align: center;">0.3</td><td style="text-align: center;">0</td><td style="text-align: center;">1.0</td></tr> <tr><td style="text-align: center;">600 METER</td><td style="text-align: center;">0.075</td><td style="text-align: center;">0.15</td><td style="text-align: center;">0</td><td style="text-align: center;">0</td></tr> <tr><td style="text-align: center;">800 METER</td><td style="text-align: center;">0.075</td><td style="text-align: center;">0.15</td><td style="text-align: center;">0</td><td style="text-align: center;">0</td></tr> </table>				SOUND RANGING LAYER	<input type="checkbox"/> 1 TO 2 TIMES 200-METER LAYER	<input type="checkbox"/> OVER 2 TIMES 200-METER LAYER	<input type="checkbox"/> LESS THAN 200-METER LAYER AND WITHIN 2 KNOTS OF SURFACE	<input type="checkbox"/> LESS THAN 200-METER LAYER AND NOT WITHIN 2 KNOTS OF SURFACE	NORMAL STRUCTURE	STRUCTURE 2	STRUCTURE 3	STRUCTURE 4	SURFACE	0.2	0.4	0	0	200 METER	0.5	0	1.0	0	400 METER	0.15	0.3	0	1.0	600 METER	0.075	0.15	0	0	800 METER	0.075	0.15	0	0	EFFECTIVE WIND DIRECTION (tens of mills) SPEED (knots) RELEASE TIME DELIVER TO DELIVERY TIME			
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RADIOSONDE OBSERVATION VIRTUAL _____ °C x 3 _____ THERMISTERS _____ °C = _____ °C 4 (effective temperature)								EFFECTIVE WIND DIRECTION (tens of mills) SPEED (knots) RELEASE TIME DELIVER TO DELIVERY TIME																																					

TIME OF SUNRISE		TIME OF SUNSET		OBSERVER		RECORDER		PLOTTER		CHECKER	
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Computations for sound ranging effective temperature using the pilot balloon method

Effective temperature: $T_s = (3 T_v + T_t)/4$

T_s = Sound ranging effective temperature

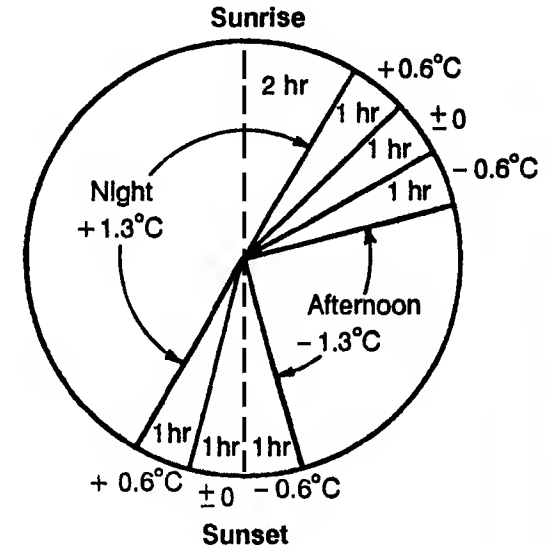
T_v = Surface virtual temperature

T_t = Surface dry-bulb temperature

1. Subtract wet-bulb reading from dry-bulb reading to obtain wet-bulb depression.
2. Obtain surface virtual temperature (T_v) from FM 6-16-1, Table 3-1 using dry-bulb reading and wet-bulb depression as arguments.

Example: Dry-bulb 28.0°C 28.0°C
Wet-bulb 25.2°C
Depression 2.8°C
Virtual temperature $32^\circ\text{C} \times 3 = \frac{96.0^\circ\text{C}}{124.0^\circ\text{C}/4 = 31^\circ\text{C}}$
Time of day correction
(Night for this example) +1.3°C
Effective temperature 32.3°C

Met day for sound ranging



1. When SUR wind exceeds 15 knots, use Afternoon (-1.3°C).
2. In rain, drizzle, and fog, use no correction.
3. When SUR wind is 5-15 knots and sky is half to total overcast, use Afternoon (-1.3°C).
4. Otherwise use met day